

Application No. 10/689,792
Reply to Office action of April 3, 2007

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Listing of Claims:

1. (PREVIOUSLY PRESENTED) An electro-active device, said electro-active device comprising,

- a) a substrate;
- b) a first electrode disposed on a surface of said substrate;
- c) a second electrode;
- d) at least one electro-active layer disposed between said first electrode and said second electrode, wherein said at least one electro-active layer comprises one of a light absorbing layer and a light emitting layer;
- e) a first metal-containing layer disposed between said electro-active layer and one of said first electrode and said second electrode; wherein said first metal-containing layer comprises at least one metal disposed in a plurality of domains forming a discontinuous layer on a surface of at least one of said first electrode and said second electrode, and wherein at least one of said first electrode and said second electrode is a transparent electrode, and wherein said at least one metal is selected from platinum, palladium, gold, silver, ruthenium, osmium, iridium, rhodium, copper, nickel, and combinations thereof.

2. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 1, wherein said first metal-containing layer is disposed between said electro-active layer and said transparent electrode and is transparent to light.

3. (original) The electro-active device according to Claim 1, wherein said first metal-containing layer is transparent to light having a wavelength in a range from about 300 nm to about 10 microns.

4. (original) The electro-active device according to Claim 1, wherein said first metal-containing layer and said transparent electrode are transparent to at least one of ultraviolet, infrared, near infrared, and visible light.

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5. (original) The electro-active device according to Claim 1, wherein said first metal-containing layer has a transparency to light of at least 80%.

6. (CANCELED) The electro-active device according to Claim 1, wherein said at least one metal comprises at least one transition metal.

7. (CANCELED) The electro-active device according to Claim 6, wherein said at least one transition metal is one of platinum, palladium, gold, silver, ruthenium, osmium, iridium, rhodium, copper, nickel, aluminum, and combinations thereof.

8. (CURRENTLY AMENDED) The electro-active device according to ~~Claim 7~~ Claim 1, wherein said at least one transition metal is one of platinum, gold, and combinations thereof.

9. (original) The electro-active device according to Claim 1, wherein each of said plurality of domains has a mean diameter of less than the wavelength of ultraviolet light.

10. (original) The electro-active device according to Claim 1, wherein each of said plurality of domains has a mean diameter of less than the wavelength of visible light.

11. (original) The electro-active device according to Claim 1, wherein each of said plurality of domains has a mean diameter of less than the wavelength of near infrared radiation.

12. (original) The electro-active device according to Claim 1, wherein said plurality of domains has a mean diameter of less than the wavelength of infrared radiation.

13. (canceled)

14. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 1, wherein said discontinuous layer covers at least one percent of said surface.

15. (canceled)

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16. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 1, wherein said metal-containing layer has a thickness in a range from about 0.5 nm to about 100 nm.

17. (currently amended) The electro-active device according to ~~Claim 1~~ Claim 28, wherein at least one of said first metal-containing layer and second metal-containing layer comprises less than a monolayer of said at least one metal on a surface of at least one of said first electrode and said second electrode.

18. (original) The electro-active device according to Claim 1, wherein said first metal-containing layer effects a change of at least 0.1 eV in a work function of a surface of at least one of said first electrode and said second electrode.

19. (original) The electro-active device according to Claim 1, wherein said electro-active device is a photovoltaic cell.

20. (original) The electro-active device according to Claim 1, wherein said electro-active device is an organic light emitting diode.

21. (original) The electro-active device according to Claim 1, wherein said substrate is a glass substrate.

22. (original) The electro-active device according to Claim 1, wherein said substrate is a polymeric substrate.

23. (original) The electro-active device according to Claim 22, wherein said polymeric substrate comprises at least one of a polycarbonate, a polyolefin, a polyester, a polyimide, a polysulfone, an acrylate, and combinations thereof.

24. (original) The electro-active device according to Claim 1, wherein said transparent electrode comprises at least one of a metal oxide, a metal, and combinations thereof.

25. (original) The electro-active device according to Claim 24, wherein said metal oxide is one of indium oxide, tin oxide, indium tin oxide, zinc oxide, indium zinc oxide,

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gallium indium tin oxide, zinc indium tin oxide, antimony oxide, and combinations thereof.

26. (original) The electro-active device according to Claim 25, wherein said metal oxide further comprises at least one dopant, wherein said at least one dopant is gallium, zinc, and combinations thereof.

27. (original) The electro-active device according to Claim 24, wherein said metal is one of gold, silver, aluminum, and combinations thereof.

28. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 1, further comprising a second metal-containing layer disposed between said least one electro-active layer and one of said first electrode and said second electrode.

Claims 29-50 CANCELLED

51. (PREVIOUSLY PRESENTED) An electro-active device, said electro-active device comprising,

- a) a substrate;
- b) a first electrode disposed on a surface of said substrate;
- c) a second electrode;
- d) at least one electro-active layer disposed between said first electrode and said second electrode, wherein said at least one electro-active layer comprises one of a light absorbing layer and a light emitting layer;
- e) a first metal-containing layer disposed between said electro-active layer and one of said first electrode and said second electrode, wherein said first metal-containing layer comprises at least one metal disposed in a plurality of domains forming a discontinuous layer on a surface of at least one of said first electrode and said second electrode, wherein at least one of said first electrode and said second electrode is a transparent electrode, and wherein said first metal-containing layer is disposed between said electro-active layer and said transparent electrode and is transparent to light, and

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wherein said at least one metal is selected from platinum, palladium, gold, silver, ruthenium, osmium, iridium, rhodium, copper, nickel, and combinations thereof.

52. (original) The electro-active device according to Claim 51, wherein said first metal-containing layer has a transparency to visible light of at least 80%.

53. (original) The electro-active device according to Claim 51, wherein said first metal-containing layer is transparent to light having a wavelength in a range from about 300 nm to about 10 microns.

54. (original) The electro-active device according to Claim 51, wherein said first metal-containing layer and said transparent electrode are transparent to at least one of infrared, near infrared, and visible light.

55. (original) The electro-active device according to Claim 51, wherein said first metal-containing layer has a transparency to light of at least 80%.

56. (CANCELED) The electro-active device according to Claim 51, wherein said at least one metal comprises at least one transition metal.

57. (CANCELED) The electro-active device according to Claim 56, wherein said at least one transition metal is one of platinum, palladium, gold, silver, ruthenium, osmium, iridium, rhodium, copper, nickel, aluminum, and combinations thereof.

58. (CURRENTLY AMENDED) The electro-active device according to ~~Claim 57~~ Claim 51, wherein said at least one transition metal is at least one of platinum, gold, and combinations thereof.

59. (original) The electro-active device according to Claim 51, wherein said plurality of domains has a mean diameter of less than the wavelength of ultraviolet light.

60. (original) The electro-active device according to Claim 51, wherein said plurality of domains has a mean diameter of less than the wavelength of visible light.

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61. (original) The electro-active device according to Claim 51, wherein said plurality of domains has a mean diameter of less than the wavelength of near infrared radiation.

62. (original) The electro-active device according to Claim 51, wherein said plurality of domains has a mean diameter of less than the wavelength of infrared radiation.

63. (canceled)

64. (original) The electro-active device according to Claim 51, wherein said plurality of domains forms a discontinuous layer on a surface of at least one of said first electrode and said second electrode.

65. (original) The electro-active device according to Claim 64, wherein said discontinuous layer covers at least one percent of said surface.

66. (canceled)

67. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 51, wherein said metal-containing layer has a thickness in a range from about 0.5 nm to about 100 nm.

68. (original) The electro-active device according to Claim 51, wherein said first metal-containing layer comprises less than a monolayer of said at least one metal on a surface of at least one of said first electrode and said second electrode.

69. (CURRENTLY AMENDED) The electro-active device according to ~~Claim 51~~Claim 80, wherein at least one of said first metal-containing layer and said second metal-containing layer effects a change of at least 0.1 eV in a work function of a surface of at least one of said first electrode and said second electrode.

70. (original) The electro-active device according to Claim 51, wherein said electro-active device is a photovoltaic cell.

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71. (original) The electro-active device according to Claim 51, wherein said electro-active device is an organic light emitting diode.

72. (original) The electro-active device according to Claim 51, wherein said substrate is a glass substrate.

73. (original) The electro-active device according to Claim 51, wherein said substrate is a polymeric substrate.

74. (original) The electro-active device according to Claim 73, wherein said polymeric substrate comprises at least one of a polycarbonate, a polyolefin, a polyester, a polyimide, a polysulfone, an acrylate, and combinations thereof.

75. (original) The electro-active device according to Claim 51, wherein said transparent electrode comprises at least one of a metal oxide, a metal, and combinations thereof.

76. (original) The electro-active device according to Claim 75, wherein said metal oxide is one of indium oxide, tin oxide, indium tin oxide, zinc oxide, indium zinc oxide, gallium indium tin oxide, zinc indium tin oxide, antimony oxide, and combinations thereof.

77. (original) The electro-active device according to Claim 76, wherein said metal oxide further comprises wherein said metal oxide further comprises at least one dopant, wherein said at least one dopant is one of gallium, zinc, and combinations thereof.

78. (original) The electro-active device according to Claim 75, wherein said metal is one of gold, silver, aluminum, and combinations thereof.

79. (original) The electro-active device according to Claim 51, wherein plurality of domains are formed by decomposing a organometallic complex on a substrate and decomposing said organometallic complex at a temperature of less than about 200°C.

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80. (PREVIOUSLY PRESENTED) The electro-active device according to Claim 51, further comprising a second metal-containing layer disposed between said least one electro-active layer and one of said first electrode and said second electrode.

Claims 81-128 CANCELLED